NOTES.

A RESOLUTION for the establishment of a League of Nations was passed by the Inter-Allied Conference at Paris on Saturday. It was moved by President Wilson in an eloquent speech, in the course of which he said:—"Is it not a startling circumstance, for one thing, that the great discoveries of science, that the quiet studies of men in laboratories, that the thoughtful developments which have taken place in quiet lecture-rooms, have now been turned to the destruction of civilisation? The powers of destruction have not so much multiplied as gained facility. The enemy whom we have just overcome had at his seats of learning some of the principal centres of scientific study and discovery, and he used them in order to make destruction sudden and complete; and only the watchful, continuous co-operation of men can see to it that science as well as armed men are kept within the harness of civilisation." We have on many occasions pointed out that responsibility for the use of scientific discoveries in destructive devices depends upon statesmen and democracy rather than upon the men who labour to increase natural knowledge. It is for those men to promote the higher national and international feeling of fellowship which will repudiate the doctrine of force as the main factor in the evolution of civilisation, and to encourage the development of science as the chief means of securing human progress. The invention of gunpowder and the use of it in scientific appliances freed the people from the power of the barons in the Middle Ages and altered the political organisation of Europe. Thanks to the existence of scientific workers in the Allied countries, free peoples have been able to establish their cause of righteous dealing against the arrogant military aristocracy of Germany. Political power is now in the hands of democracy, which has yet to prove that it will make noble use of the forces provided by progressive scientific knowledge.

IT is rather surprising to find from a study of captured maps and survey documents that the German Topographical Staff was far behind our own in enterprise and originality as applied to war-maps. It certainly has not justified the German reputation for thoroughness and efficiency. The Royal Geographical Society has acquired a number of captured German war-maps, and has placed them on exhibition in the society's rooms. Mr. A. R. Hinks gives some notes on these maps in the *Geographical Journal* for January (vol. liii., No. 1). It is curious to note that, despite their plans of invasion, the Germans do not seem to have provided themselves with a better map of north-east France than a photographic reproduction of the French 1/80,000. Requiring room for more detail, they enlarged this to 1/50,000 and added contours from the hachures of the original, but the result was not particularly satisfactory. Some of the contours have since proved to be wrong. The German Survey Staff does not seem to have been successful in field work under fire; good work, so far as our captures show, was done only on areas well behind the front. But more curious than the failure of the Germans to make good maps is their apparent inability to appreciate them when they fell into their hands through the fortune of war. In Lille they found all the cadastral plans of the Département du Nord, and in Albert quantities of good British maps; yet there is no evidence that they made use of any of these. In sound-ranging the enemy did not come up to our standard, and in flash-spotting he was behind us, at least until a late period of the war. In the use of air-photographs for trench-mapping he seems to have been more successful, and some of his plans of Allied trench systems were useful to our Staff. These and other considerations of a similar nature show that the German Staff was not scientifically organised, and they should be an answer to those critics who still believe that we have anything to learn from the Germans in cartography.

ANCIENT records of Mesopotamia show that the portion of it in the vicinity of Bagdad and southward to Kut-el-Amara was a very fertile region, in which artificial irrigation had been advanced to a high pitch of perfection. Indeed, a number of the old water-channels still remain, though, in most cases, the beds have become silted up during the long period of neglect under Ottoman rule. Prominent among these ancient watercourses was the Shatt-el-Hai, running southward from Kut. To the north-east of Bagdad there was a network of canals intersecting the district enclosed by the Dialah, Adhaim, and Tigris rivers. This district, once noted for its productiveness, had passed out of cultivation when its administration was taken over by the British Irrigation Department of the Expeditionary Force. The *Times* of January 20 announces the complete restoration and widening of the old Mansuriah Cut, with the construction of a solid concrete regulator or dam at the head. By the recommissioning of the channel, which is six miles in length, an area of 300,000 acres has been rendered cultivable. The canal leaves the River Dialah at a point some seventy miles north-east of Bagdad, and passes through a rocky gorge, in which the gradient is 4 ft. per mile. A little lower down a change to 1 ft. per mile is effected by means of five masonry falls. The width of 25 ft. at the entrance is increased to 50 ft. below the gorge. The opening of the Hindieh barrage on the River Euphrates is another instance of British enterprise. It has resulted in the reclamation of a further 500,000 acres for agricultural operations.

THE Registrar-General's return for the week ending January 18 shows a decided decrease in the number of deaths from influenza both in London and for the ninety-six great towns of England and Wales. In London the deaths were forty-three, which is a drop of twenty-five compared with the previous week, and 63 per cent. of the deaths occurred at ages between twenty and sixty-five years. In the ninety-six great towns the deaths were 274, compared with 380 in the preceding week. The deaths are now lower than at any time since the disease became epidemic at the commencement of last October. The *Times* correspondent at Christiania gives a report of influenza in Iceland in the issue for January 24, based on a telegram from an Icelandic merchant, who gives the first authentic account of the great ravage of "Spanish" influenza in Iceland. "When he left Iceland at the New Year about 600 persons had died in the capital, Reykjavik, and its environs out of a population of 8000."

A LARGE diamond of fine "blue-white" quality is reported as having been found in the Jagersfontein mine, Orange Free State. The weight is given as 388¼ carats, equivalent to 77·65 grams. The stone is thus much smaller than the "Excelsior" of 199·04 grams and the "Jubilee" of 130·16 grams, found in the same mine in 1893 and 1895 respectively. Another large stone of about 120 grams was found there in 1883 or 1884. The Jagersfontein diamond mine, though producing much less than the Kimberley mines, yields a higher proportion of fine quality stones. For comparison may be added the weight, 621·2 grams, of the "Cullinan" diamond, found in 1905 in the Premier mine, near Pretoria, Transvaal. This, though the largest individual crystal, is not the largest known mass of diamond, for a piece of "carbonado" weighing 631·9 grams was found in 1895 in Bahia, Brazil. These weights are here quoted in grams to avoid any confusion between the old carat weights and the metric carat (one-fifth gram) now in use.

Sir Rickman J. Godlee, Bart., has been elected president of the Birmingham and Midland Institute.

We regret to see the announcement of the death on January 25, at fifty-one years of age, of Dr. G. S. Corstorphine, principal of the South African School of Mines and Technology, Johannesburg.

Mr. F. Knab, of the Bureau of Entomology, U.S. Department of Agriculture, who died in November last, bequeathed his library and entomological collections to the U.S. National Museum; he also left a sum of money to the Entomological Society of Washington for its publication fund.

Sir Aubrey Strahan, director of the Geological Survey, and Eng. Vice-Admiral G. G. Goodwin have been elected honorary members of the Institution of Petroleum Technologists, and Dr. A. E. Dunstan and Mr. W. R. Ormandy members of the council of the institution.

The third lecture of the series arranged by the Industrial Reconstruction Council will be held in the Saddlers' Hall, Cheapside, E.C.2, on Wednesday, February 5. The chair will be taken at 4.30 by the Right Rev. the Lord Bishop of London, and a lecture entitled "The Industrial Awakening" will be delivered by Mr. Ernest J. P. Benn, chairman of the council. Applications for tickets should be made to the Secretary, I.R.C., 2 and 4 Tudor Street, E.C.4.

The death of Sir James Sawyer on January 27, in his seventy-fifth year, is announced. Sir James was professor of pathology at Queen's College, Birmingham, from 1875 to 1878, when he became professor of materia medica and therapeutics, a chair which he resigned in 1885 on being appointed to the professorship of medicine, which post he occupied until 1891. He was the author of many papers in medical periodicals, and of a number of volumes on medical subjects, including a valuable work entitled "Contributions to Practical Medicine."

Next Tuesday, February 4, Prof. J. T. MacGregor-Morris will deliver the first of a course of two lectures at the Royal Institution on "Study of Electric Arcs and their Applications." On Thursday, February 6, Dr. W. Wilson will give the first of two lectures on the movements of the sun, earth, and moon, illustrated by a new astronomical model. The Friday evening discourse on February 7 will be delivered by Prof. J. G. Adami on medical research in its relationship to the war; and on February 14 by Prof. Cargill G. Knott on earthquake waves and the interior of the earth.

The annual meetings of the Institution of Naval Architects will be held on Wednesday, April 9, and the two following days, in the hall of the Royal Society of Arts, John Street, Adelphi, W.C.2. The Right Hon. the Earl of Durham, K.G., president, will occupy the chair. A gold medal will be awarded by the council to any person not being a member or associate member of council who shall at the forthcoming meetings read a paper which, in the judgment of the council, is deemed to be of exceptional merit. The council will also offer a premium of books or instruments to the reader of any paper, with the same reservations, which, in the judgment of the council, merits this distinction.

Sir R. H. Inglis Palgrave, whose death on January 25, in his ninety-second year, we regret to announce, was a distinguished authority on economics and statistics, and the author of a monumental "Dictionary of Political Economy" published in three volumes, as well as a large number of other books on related subjects. He was editor of the *Economist* from 1877 to 1883, was elected a fellow of the Royal Society in 1882, was president of the Section of Economic Science and Statistics of the British Association at the Southport meeting in 1883, and received his knighthood in 1909. The greater part of his life was devoted to the business of banking, of which, with economics, he was a profound student, and to the literature of which he made many contributions of high distinction.

By the sudden death of Mr. Wm. Allingham on January 24 the Meteorological Office loses its principal assistant in the Marine Department. Mr. Allingham began his career at sea, but left in early life owing to an accident, and was for some time afterwards employed at the Admiralty. In 1875, at the age of twenty-five, he joined the marine branch of the Meteorological Office, and for some years prior to his death was chief assistant. Mr. Allingham was a prolific writer; he was the author of "A Manual of Marine Meteorology," and joint author of a volume on "Navigation" with Capt. Wilson-Barker, commander of H.M.S. *Worcester*. He also edited the later editions of Lecky's "Wrinkles in Practical Navigation." He was a frequent contributor to the *Liverpool Journal of Commerce*, the *Nautical Magazine*, the *Syren*, and other shipping papers. Mr. Allingham's work was of a specially technical character, and much which was unsigned has been used by the Navy and the mercantile marine.

We have received the annual report of Livingstone College for the year 1917–18. The college provides for the training of those who intend to be foreign missionaries in the elements of medicine and surgery. Since August, 1915, the college has been utilised as a hospital for wounded soldiers, and supported by voluntary contributions. About 300*l.* is still needed in order that the hospital council may hand over its accounts to the college without a deficit. The patients are now being evacuated, and it is hoped that the college will shortly resume its ordinary work.

The number of eggs laid by the cuckoo forms the subject of an interesting article by Mr. Edgar Chance in *British Birds* for January. The author kept careful watch on the movements of two cuckoos which were laying their eggs in the nests of meadow-pipits. Assuming that the eggs of any given cuckoo will always present the same peculiarities of coloration—and this is probably the case—he ascribes ten or eleven eggs to one of these birds, and four or five to the other. The smallness of the clutch of the second bird may be attributed, he suggests, to age and diminishing fertility. The author is inclined to believe that the hen cuckoo is able to exercise a "certain amount of control over the reproductive organs, so that the eggs are laid on dates to suit the requirements of the fosterers,' and that "it is quite possible also that the number of eggs in the clutch is regulated by the numbers of suitable dupes to be found."

The discussion on the subject of local war museums which appears in the *Museums Journal* for January shows clearly enough that the ideals of what such museums should be are still in a very crude state. The theme, indeed, is one bristling with difficulties, and calling for the most careful consideration. Unless the greatest care is exercised, such museums will become a serious menace to existing museums, already hindered in their usefulness by lack of both space and funds. It seems to be generally agreed that local museums should confine their exhibits of objects bearing on the war to such as are of strictly local interest. But even if this course is followed, an appalling amount of duplication in the objects displayed will result, without serving any useful end whatever. Everything of debatable value, or which serves no real educational end, should be severely left alone.

Referring to Mr. W. R. Nash's article on the diminution of rainfall with elevation above ground in "British Rainfall, 1917," our reviewer remarked in Nature of January 16 that the results there set forth are "rather suggestive for aircraft." Mr. Carle Salter, joint editor of "British Rainfall," writes to say that the diminution of rainfall with elevation, with which Mr. Nash deals, "represents, not a natural phenomenon, but a defect in instrumental capacity. There may be real variations in the amount of rain falling at different elevations above the ground, but, except at very great heights, the amount of variation is probably trifling in comparison with the large falling-off observed at Greenwich, amounting to 35 per cent. at 50 ft." The article was taken by our reviewer at its face value, and it does not contain the explanation now given of the differences observed.

A special article is given in the *Times* of January 20 on "Rainfall in 1918," contributed by Dr. H. R. Mill, director of the British Rainfall Organisation. Detailed rain measurements given show the total fall at numerous stations from all parts of the British Isles; the results, however, are only tentative, and form a small part of the voluminous records from more than 5000 stations, which will eventually be given in "British Rainfall, 1918." The average fall for thirty-five years, 1875–1909, is also given, and the difference of 1918 from the average as well as the 1918 fall as a percentage of the average. The instances of excess are four times as great as those of deficiency. In Wales the excess is 13 per cent. of the average, in Ireland 11 per cent., in England N. 10 per cent., in Scotland 6 per cent., and in England S. 5 per cent. of the average fall. At present the rainfall of the British Isles as a whole, it is said, is passing through a series of alternately comparatively wet and dry years. The driest part of the country with respect to the average was in the north of England and the east of Scotland, where in some places the deficiency was as great as 18 per cent. The greatest excesses of rainfall in 1918 occurred in the west, where the average itself is always the greatest. A map of the British Isles is given showing the relative distribution of the rainfall for the year. Attention is directed to the outstanding feature of the wet September in 1918, when England and Wales had nearly two and a half times the average fall. Rainfall totals for London are given for each month of 1918 and for the year, and the falls are compared with the average for fifty years. The total for the year at Camden Square was 29·69 in., which is 118 per cent. of the average. Rain fell on 195 days, which is thirty-two days more than the normal.

The paper on "Electrical Oscillations in Antennas and Inductance Coils," by J. M. Miller, published by the U.S. Bureau of Standards (No. 326), will be found useful by mathematical electricians, as it helps to clear up some of the difficult points in the ordinary working theory. The methods adopted at present for measuring the electrical constants of an antenna are on a very dubious footing, and so we welcome this paper. Most authors apply the theory of circuits having uniformly distributed electrical characteristics, such as telephone and transmission cables, to antennas. We have never been able to follow the reason of this practice, and so we welcome Mr. Miller's paper as a serious and partly successful attempt to find a sounder basis on which to build radio-telegraphic practice.

The Council of British Ophthalmologists has issued the report of the committee appointed to determine standards of illumination of Snellen's test types when used in testing the vision of candidates for the public services. The committee is of opinion that artificial illumination rather than daylight should be used in order that there may be no doubt as to its adequacy. The minimum illumination should be sufficient to ensure that the brightness of the test card is not less than that of a new card with an illumination of 3 foot-candles. The card should have a small surface and be as uniformly illuminated as possible, should not be backed by a contrasting background, or have bright objects or glaring lights near it. The testing-room should be moderately illuminated. Three methods of providing the proper illumination by means of gas, oil, and electric light respectively are described in the report.

The booklet on "Photomicrography" issued by the Wratten Division of Kodak having gone out of print, it is replaced during the paper shortage by "Notes on the Use of Wratten 'M' Filters." Although much smaller than the other, the new issue includes all the valuable tabulated matter, and, of course, the various items are brought up to date. In the table of the exposure factors for the "M" filters with Wratten "M" plates, the factors for Nernst lamps are withdrawn, and those for the recently introduced Pointolite lamp are introduced. Some new colour filters are described. One converts light from a metal filament lamp into equivalent daylight, and is also advantageously used with the Pointolite lamp and the smaller-powered half-watt lamps. Another is of a neutral tint transmitting only about 3 per cent. of the incident light, and is useful for focussing with a powerful illuminant or lengthening exposure when using low powers. Filters that may advantageously replace the usual green glass are described, and the firm hopes shortly to be able to supply a blue filter to transmit light of a dominant wave-length of 470, especially for visual use when the greatest resolving power is required.

Mr. Walter Jamieson, of the physics department, Allan Glen's School, Glasgow, has sent us a little instrument for which he suggests the name "Ixioscope"; it is a modification of the spinthariscope of Sir William Crookes. The device consists in a roughly spherical lens made by blowing a bulb on the end of a glass tube and filling it with water. The upper half is then varnished, and while still wet is dusted over with powdered zinc blende containing a very small quantity of radium; viewing this from the bottom through the water, the scintillations due to the α particles are distorted into nebulous points and streaks, and are in constant movement. The streaks of light on the outer edge of the luminous field appear to be in rapid rotation. Mr. Jamieson states that "eight out of ten people insist that the rotation is anti-clockwise." The illusion is certainly striking at first, but a few seconds' concentration leaves one very uncertain, not only of the suggested direction, but also of any actual rotary appearance at all. The effect is probably due to the distortions produced by the imperfect lens giving rise to an apparent maximum of motion on the outer edges of the luminous disc; this suggests a spinning wheel. A worked sphere of glass coated with luminous powder in the same way shows the dancing scintillations in a normal manner, and there is no suggestion whatever of rotation.

The Cambridge Scientific Instrument Co., Ltd., has issued a leaflet describing typical instruments for use in power stations. By means of a large diagram the company illustrates where some of its instruments can be usefully placed in the boiler-house, dynamo station, and engineer's room. By the use of an electric distance thermometer the engineer can at once tell the temperature of the steam at the stop-valve, of the circulating water at the inlet and outlet, and also of the supply air, condenser, and oil at their inlets and outlets. This leaflet will help the engineer to understand how useful electrical distance thermometers can be. These thermometers can be placed in almost inaccessible positions, such as the base of a smoke-stack or in steam-pipes and economisers. Hence the necessity for men having to climb ladders, etc., at frequent intervals can be obviated. There will also be a great saving of labour in recording the wet- and dry-bulb temperatures in cooling-towers. The leaflet shows an illustration of a distance thermometer recorder fixed on the table in the engineer's room. In the boiler-house it also shows the company's well-known dial draught gauge and its bi-meter CO_2 recorder. As it seems certain that in the near future many huge electric power stations will be constructed in this country, there will be a great demand for all kinds of scientific measuring instruments. The usual custom of placing contractors under money penalties for failure to comply with the steam efficiency guaranteed in the specification is an excellent one. In many cases the cost of the most elaborate thermal tests is but a small fraction of the money penalty at stake. Hence the accuracy of these tests has been much improved of recent years.

Mr. C. M. Whittaker wrote some time ago to object to some statements made by the reviewer of his "Modern Dyeing Methods" in our issue of November 7 last. Reference was made in the review to inadequacy of treatment of one section of the book, to lack of proportion in another, and to the omission of exact quantitative methods of estimating dyestuffs. It is obvious that upon these matters a reviewer is justified in expressing his opinion, even though it does not coincide with that of the author; and also that no useful scientific purpose would be served by the publication of correspondence upon the different points of view, even if space permitted of it. On one matter, however, we are glad to correct a statement in the review. Though the sections on direct cotton dyestuffs, the insoluble azo-colours, and the resorcine dyestuffs do not give lists of groups at the beginning, as in earlier sections, the examples are included elsewhere in the sections, and our reviewer regrets that he overlooked them.

Those interested in the mechanical handling of materials will find a great deal of useful information and applications in the *Electrician* for January 10. Among other subjects treated in this special number is that of the gravity conveyor. On this principle it is worth while to elevate the materials sufficiently at one stage of the process so that their progress thereafter is obtained automatically by gravity. Conveyors on this system have been in existence for many years—for example, in flour mills—but the application has been extended greatly during recent years. The gradient of a gravity installation varies from 2 to 5 per cent.; the latter figure is not the maximum, but it is rarely insufficient. The "humper" is used when it is desired to convey for a distance longer than that obtainable by the available head or fall, and consists of a short mechanical elevator, generally inclined at 45°, which renews the gradient and thus permits the packages to travel to the end of the runway. Roller paths, switches, curves, shoots, and other accessories are described fully in the article. Another section of the journal of interest to engineers is an article on conveyor chains, sprocket-wheels, buckets, etc. This article is fully illustrated with detail drawings. There are also very full articles on the pneumatic handling of cereals, the equipment of silo granaries, and munition-handling devices, which cannot fail to be of service to any desirous of obtaining information regarding these labour-saving appliances.

The greatest departure in the practice of shipbuilding which has been recently introduced is the extensive adoption of the "straight-frame" system of construction. This was begun and carried out to a very large extent by Sir Eustace d'Eyncourt and Mr. Thomas Graham, who got out designs on this system in the early summer of 1917. The idea of the design is to build a ship the transverse sections of which showed straight sides and bottom intersecting at a point forming an angular bilge, but at the same time retaining the orthodox shape of the waterplanes in a fore-and-aft direction, so that the ultimate features affecting resistance would not present anything likely to demand an increase of driving power. Drawings illustrative of this system appear in an article in *Engineering* for January 17, and we learn from this article that model experiments have confirmed the contention of the designers, and that a suitable adjustment of the "chine" line at the ends would so accommodate the form to the stream-line theory that practically no extra power is required. The Government adopted the type for its "National" (better known as "N"-type) vessels. At present there are built, building, and on order throughout the world on the d'Eyncourt-Graham system vessels representing 750,000 to 1,000,000 tons of dead-weight.

Messrs. Macmillan and Co.'s new list of announcements contains many books likely to be of interest to readers of Nature. Among them we notice "Annals of the Philosophical Club of the Royal Society," written from its minute-books by Prof. T. G. Bonney; "Botany of the Living Plant," Prof. F. O. Bower, illustrated; vol. ii. of "A Text-book of Embryology—the Non-Mammalian Vertebrates," Prof. J. Graham Kerr, illustrated; "Science and Fruit-growing," being an account of the results obtained at the Woburn Experimental Fruit Farm since its foundation in 1894, the Duke of Bedford and S. Pickering; "Dr. John Fothergill and his Friends: Chapters in Eighteenth-century Life," Dr. R. H. Fox, illustrated; and a new edition—the third—of Preston's "The Theory of Heat," revised by J. R. Cotter, illustrated. Messrs. Macmillan will also publish the following books by American authors:—"Elements of Electrical Engineering," vol. i., "Direct- and Alternating-current Machines and Systems," Prof. W. S. Franklin, and a second edition of "Infection and Resistance," Prof. H. Zinsser. *Messrs. J. M. Dent and Sons, Ltd.*, are publishing "Osiers and Willows," by W. P. Elmore, illustrated, dealing with their cultivation and use. *Messrs. P. S. King and Son, Ltd.*, have nearly ready for publication "The Silk Industry and Trade: A Study of the Economic Organisation of the Export Trade of Kashmir and Indian Silks, with Special Reference to their Utilisation in the British and French Markets," R. C. Rawlley. *Messrs. E. and S. Livingstone* (Edinburgh) will publish shortly vol. iii. of Kraepelin's "Psychiatry"—"Dementia Præcox"—translated by Dr. R. Mary Barclay, and edited by Dr. G. M. Robertson; also "Anatomy Mnemonics." The *Essex Field Club* has in preparation a volume by Miss G. Lister entitled "A Short History of the Study of Mycetozoa in Britain, with a List of the Species recorded from Essex." It will be issued in the club's series of special memoirs.